8.4 p489

(1) $\frac{4}{x+3} \cdot \frac{x-5}{9}$

$= \boxed{\frac{4x-20}{9x+27}}$

(3) $\frac{x}{3} \cdot \frac{12}{x+5}$

$= \frac{x}{3} \cdot \frac{3 \cdot 4}{x+5}$

$= \boxed{\frac{4x}{x+5}}$

(5) $\frac{3}{x} \cdot \frac{4x}{15}$

$= \frac{3}{x} \cdot \frac{4x}{3 \cdot 5}$

$= \boxed{\frac{4}{5}}$

(7) $\frac{x-3}{x+5} \cdot \frac{4x+20}{9x-27}$

$= \frac{(x-3)}{(x+5)} \cdot \frac{4(x+5)}{9(x-3)}$

$= \boxed{\frac{4}{9}}$

(9) $\frac{x^2+9x+14}{x+7} \cdot \frac{1}{x+2}$

$= \frac{(x+2)(x+7)}{(x+7)} \cdot \frac{1}{(x+2)}$

$= \boxed{1}$

(11) $\frac{x^2-25}{x^2-3x-10} \cdot \frac{x+2}{x}$

$= \frac{(x-5)(x+5)}{(x-5)(x+2)} \cdot \frac{(x+2)}{x}$

$= \boxed{\frac{x+5}{x}}$

(13) $\frac{4y+30}{y^2-3y} \cdot \frac{y-3}{2y+15}$

$= \frac{2(2y+15)}{y(y-3)} \cdot \frac{(y-3)}{(2y+15)}$

$= \boxed{\frac{2}{y}}$

8.2 p489

(15) $\dfrac{y^2-7y-30}{y^2-6y-40} \cdot \dfrac{2y^2+5y+2}{2y^2+7y+3}$

$= \dfrac{(y-10)(y+3)}{(y-10)(y+4)} \cdot \dfrac{(2y+1)(y+2)}{(2y+1)(y+3)}$

$= \boxed{\dfrac{y+2}{y+4}}$

(17) $(y^2-9) \cdot \dfrac{4}{y-3}$

$= (y+3)(y-3) \cdot \dfrac{4}{(y-3)}$

$= \boxed{4(y+3)}$

(19) $\dfrac{x^2-5x+6}{x^2-2x-3} \cdot \dfrac{x^2-1}{x^2-4}$

$= \dfrac{(x-3)(x-2)}{(x-3)(x+1)} \cdot \dfrac{(x-1)(x+1)}{(x-2)(x+2)}$

$= \boxed{\dfrac{x-1}{x+2}}$

(21) $\dfrac{x^3-8}{x^2-4} \cdot \dfrac{x+2}{3x}$

$= \dfrac{(x-2)(x^2+2x+4)}{(x-2)(x+2)} \cdot \dfrac{(x+2)}{3x}$

$= \boxed{\dfrac{x^2+2x+4}{3x}}$

8.2 p481

(23) $\dfrac{(x-2)^3}{(x-1)^3} \cdot \dfrac{x^2-2x+1}{x^2-4x+4}$

$= \dfrac{(x-2)^2(x-2)}{(x-1)^2(x-1)} \cdot \dfrac{(x-1)^2}{(x-2)^2}$

$= \boxed{\dfrac{x-2}{x-1}}$

(25) $\dfrac{6x+2}{x^2-1} \cdot \dfrac{1-x}{3x^2+x}$

$= \dfrac{2(3x+1)}{(x-1)(x+1)} \cdot \dfrac{-1(x-1)}{x(3x+1)}$

$= \boxed{\dfrac{-2}{x(x+1)}}$

(27) $\dfrac{25-y^2}{y^2-2y-35} \cdot \dfrac{y^2-8y-20}{y^2-3y-10}$

$= \dfrac{(5-y)(5+y)}{(y-7)(y+5)} \cdot \dfrac{(y-10)(y+2)}{(y-5)(y+2)}$

$= \dfrac{-1\cdot(y-5)}{(y-7)} \cdot \dfrac{(y-10)}{(y-5)}$

$= \dfrac{-(y-10)}{y-7}$

or

$= \boxed{\dfrac{y-10}{y-7}}$

8.6 p487

(29) $\frac{x^2-y^2}{x} \cdot \frac{x^2+xy}{x+y}$

$= \frac{(x-y)(x+y)}{x} \cdot \frac{x(x+y)}{(x+y)}$

$= \boxed{(x-y)(x+y)}$

(31) $\frac{x^2+2xy+y^2}{x^2-2xy+y^2} \cdot \frac{4x-4y}{3x+3y}$

$= \frac{(x+y)^2}{(x-y)^2} \cdot \frac{4(x-y)}{3(x+y)}$

$= \frac{(x+y)(x+y)}{(x-y)(x+y)} \cdot \frac{4(x-y)}{3(x+y)}$

$= \boxed{\frac{4(x+y)}{3(x-y)}}$

(33) $\frac{x}{7} \div \frac{5}{3}$

$= \frac{x}{7} \cdot \frac{3}{5}$

$= \boxed{\frac{3x}{35}}$

(35) $\frac{3}{x} \div \frac{12}{x}$

$= \frac{3}{x} \cdot \frac{x}{12}$

$= \frac{3}{x} \cdot \frac{1 \cdot x}{3 \cdot 4}$

$= \boxed{\frac{1}{4}}$

(37) $\frac{15}{x} \div \frac{3}{2x}$

$= \frac{3 \cdot 5}{x} \cdot \frac{2x}{3}$

$= \boxed{10}$

8.2 p461

(39) $\frac{x+1}{3} \div \frac{3x+3}{7}$

$= \frac{x+1}{3} \cdot \frac{7}{3(x+1)}$

$= \boxed{\frac{7}{9}}$

(41) $\frac{7}{x-5} \div \frac{28}{3x-15}$

$= \frac{7}{(x-5)} \cdot \frac{3(x-5)}{4 \cdot 7}$

$= \boxed{\frac{3}{4}}$

(43) $\frac{x^2-4}{x} \div \frac{x+2}{x-2}$

$= \frac{(x-2)(x+2)}{x} \cdot \frac{(x-2)}{(x+2)}$

$= \boxed{\frac{(x-2)^2}{x}}$

(45) $(y^2-16) \div \frac{y^2+3y-4}{y^2+4}$

$= (y-4)(y+4) \cdot \frac{(y^2+4)}{(y-1)(y+4)}$

$= \frac{(y-4)(y^2+4)}{y-1}$

(47) $\frac{y^2-y}{15} \div \frac{y-1}{5}$

$= \frac{y(y-1)}{3 \cdot 5} \cdot \frac{5}{(y-1)}$

$= \boxed{\frac{y}{3}}$

(49) $\frac{4x^2+10}{x-3} \div \frac{6x^2+15}{x^2-9}$

$= \frac{2(2x+5)}{(x-3)} \cdot \frac{(x-3)(x+3)}{3(2x+5)}$

$= \frac{2(x+3)}{3}$

8.2 p484

(51) $\frac{x^2-25}{2x-2} \div \frac{x^2+10x+25}{x^2+4x-5}$

$= \frac{(x-5)(x+5)}{2(x-1)} \cdot \frac{(x-1)(x+5)}{(x+5)(x+5)}$

$= \boxed{\frac{x-5}{2}}$

(53) $\frac{y^3+y}{y^2-y} \div \frac{y^3-y^2}{y^2-2y+1}$

$= \frac{y(y^2+1)}{y(y-1)} \cdot \frac{(y-1)(y-1)}{y^2(y-1)}$

$= \boxed{\frac{y^2+1}{y^2}}$

(55) $\frac{y^2+5y+4}{y^2+12y+32} \div \frac{y^2-12y+35}{y^2+3y-40}$

$= \frac{(y+1)(y+4)}{(y+4)(y+8)} \cdot \frac{(y-5)(y+8)}{(y-7)(y-5)}$

$= \boxed{\frac{y+1}{y-7}}$

(57) $\frac{2y^2-128}{y^2+16y+64} \div \frac{y^2-6y-16}{3y^2+30y+48}$

$= \frac{2(y^2-64)}{(y+8)^2} \cdot \frac{3(y^2+10y+16)}{(y-8)(y+2)}$

$= \frac{2(y-8)(y+8)}{(y+8)(y+8)} \cdot \frac{3(y+2)(y+8)}{(y-8)(y+2)}$

$= \boxed{6}$

(p6)

8.2 p489

(59) $\frac{2x+2y}{3} \div \frac{x^2-y^2}{x-y}$

$= \frac{2(x+y)}{3} \cdot \frac{(x-y)}{(x-y)(x+y)}$

$= \boxed{\frac{2}{3}}$

(61) $\frac{x^2-y^2}{8x^2-16xy+8y^2} \div \frac{4x-4y}{x+y}$

$= \frac{(x-y)(x+y)}{8(x^2-2xy+y^2)} \cdot \frac{(x+y)}{4(x-y)}$

$= \frac{(x+y)^2}{8(x-y)(x-y)}$

(63) $\frac{xy-y^2}{x^2+2x+1} \div \frac{2x^2+xy-3y^2}{2x^2+5xy+3y^2}$

$= \frac{y(x-y)}{(x+1)(x+1)} \cdot \frac{(2x+3y)(x+y)}{(x-y)(2x+3y)}$

$= \boxed{\frac{y(x+y)}{(x+1)^2}}$

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(65)

$$\left(\frac{y-2}{y^2-9y+18} \cdot \frac{y^2-4y-12}{y+2}\right) \div \frac{y^2-4}{y^2+5y+6}$$

$$= \frac{(y-2)}{(y-6)(y-3)} \cdot \frac{(y-6)(y+2)}{(y+2)} \cdot \frac{(y+2)(y+3)}{(y-2)(y+2)}$$

$$= \boxed{\frac{y+3}{y-3}}$$